
Space Weather Forecast

Issued on Thursday, 26 May 2022 at 01:29 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales <https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales>

Space Weather Forecast Headline: Chance of moderate solar activity and R1-R2 radio blackouts. Slight chance of minor geomagnetic storms on 26th and 27th.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Moderate, with a Moderate class flare and possibly Earth-directed CME (coronal mass ejection) emanating from a region in the southwest quadrant which faded two days ago. Two large regions in the northwest have been relatively inactive and have not evolved significantly. A region on the southeastern limb appears to be complex but is currently difficult to analyse due to the viewing angle from Earth. Five remaining regions are all weak or fading. No further potentially Earth-directed CMEs have been observed on available imagery.

Solar Wind / Geomagnetic Activity: The solar wind has been ambient in a benign solar wind environment. Total magnetic field strength was mainly weak, with a slight increase to moderate, mostly likely due to a weak, unforecast CME passing the Earth. The important north-south component of the magnetic field was weak throughout. Geomagnetic activity has been Quiet to Unsettled.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background with no solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be mainly Low, but with a risk of further Moderate activity and a very slight risk of High activity. The main source of this heightened risk are two active regions in the northwest quadrant, and one on the southwest limb. The faded region of a sunspot, which produced a flare and CME on 25 May could also produce further significant flare activity.

Solar Wind / Geomagnetic Activity: A fast CME which left the southwestern quadrant on 25 May, may arrive at Earth between days 2 and 4, but this is subject to a more detailed analysis as further imagery becomes available. In addition, a slow CME which left the Sun on 23 May, could glance the Earth on 28 May. Solar winds are expected to climb to elevated levels on days 1 and 2 (26 and 27 May) as the Earth connects with a solar fast wind. Geomagnetic activity is expected to start Quiet, but with an increasing risk of Active or G1/Minor Storm intervals on day 1 due to the onset of the fast solar wind, with a lower risk of these continuing into day 2. A return to Quiet conditions is currently forecast for days 3 and 4, but with a risk of CME arrival through from days 2 to 4.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to remain at background with no solar radiation storms occurring, although there is a slight chance due to the large sunspots on the northwest disc.

Geomagnetic Storms:

Geo-Magnetic Storm	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Minor or Moderate	G1 to G2	No	20	10	10	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	No	50	40	30	30
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm ⁻² sr ⁻¹ s ⁻¹)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	10	10	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = cm⁻²sr⁻¹s⁻¹)